

Question 1: In the following questions, find the correct choice of the given choices. Circle your choices in the provided table (20 marks)

1. Evaluate this command:

```
SELECT i.isotope, g.calibration FROM chart_n i, gamma_calibrations g
WHERE i.energy = g.energy;
```

What type of join is the command?

- ☒ a) Equijoin
- b) Nonequijoin
- c) Self-join
- d) The statement is not a join query

2. What is the purpose of the PL/SQL FETCH command?

- a) To define a cursor to be used later
- ☒ b) To retrieve values from the active set into local variables
- c) To call the rows identified by a cursor query into the active set
- d) To release the memory used by the cursor

3. Which command would you use to remove all the rows from the isotope table and not allow rollback?

- a) DROP TABLE isotope;
- b) DELETE isotope;
- ☒ c) TRUNCATE TABLE isotope;
- d) There is no way to remove all rows and not allow rollback

4. You are performing some conversion operations in your PL/SQL programs. To convert a date value into a text string, you would use which of the following conversion functions?

- a) CONVERT
- ☒ b) TO_CHAR
- c) TO_NUMBER
- d) TO_DATE

5. The declaration of which type(s) of constraints can cause the automatic creation of an index?

- a) A PRIMARY KEY constraint
- b) A NOT NULL constraint
- c) A FOREIGN KEY constraint
- ☒ d) A DEFAULT constraint

6. You have just removed 1,700 rows from a table that were no longer needed. In order to save the changes you've made to the database, which of the following statements are used?

- a) savepoint
- ☒ b) commit
- c) rollback
- d) set transaction

7. You are using SQL operations in Oracle. All of the following DATE functions return a DATE datatype, except one. Which one is it?

- a) NEW_TIME
- b) LAST_DAY
- c) ADD_MONTHS
- ☒ d) MONTHS_BETWEEN

8. You execute the following SQL statement: select ADD_MONTHS ('28-APR-97',120) from DUAL. What will Oracle return?

- a) 28-APR-03
- ☒ b) 28-APR-07
- c) 28-APR-13
- d) 28-APR-17

9. You wish to join the data from two tables, A and B, into one result set and display that set in your session. Tables A and B have a common column, called C in both tables. Which of the following choices correctly displays the where clause you would use if you wanted to see the data in table A where the value in column C = 5, even when there was no corresponding value in table B?

- a) where A.C = 5 AND A.C = B.C;
- ☒ b) where A.C = 5 AND A.C = B.C (+);
- c) where A.C = 5 AND A.C (+) = B.C(+);
- d) where A.C = 5;

10. Each of the following statements is true about referential integrity, except one. Which is it?

- a) The referencing column in the child table must correspond with a primary key in the parent.
- ☒ b) All values in the referenced column in the parent table must be present in the referencing column in the child.
- c) The datatype of the referenced column in the parent table must be identical to the referencing column in the child.
- d) All values in the referencing column in the child table must be present in the referenced column in the parent.

11. Could the two statements return different values ?

Select count(s_id) From student; And
Select count(*) From student;

- ☒ a) Always the same value returned
- b) First value > second value
- ☒ c) Second value > first value
- d) Always different values

if not a primary key

12. A procedure includes the following code:

```
CURSOR loc_curs IS SELECT location_id, city, country_id FROM locations;
```

Which of the following changes to the LOCATIONS table will allow the procedure to be recompiled successfully without editing its code?

- a) RENAME locations TO new_locations;
- ☒ b) ALTER TABLE locations ADD (climate VARCHAR2(30));
- c) ALTER TABLE locations DROP COLUMN city;
- d) ALTER TABLE locations DROP COLUMN country_id;

13. You need to add a new column to the EMPLOYEES table. This column will store each employee's favorite movie. A movie can be up to 4GB in size and the movies will be stored inside the database for better security. Which data type must you use for this column?

- a) CLOB
- ☒ b) BLOB
- c) LONG RAW
- d) BFILE

14. If you are using the %TYPE attribute, you can avoid hard coding the:

- ☒ a) Data type
- b) Table name
- c) Column name
- d) Constraint

15. ABC company is about to give each staff a \$500 increase in monthly salary. You want to "preview" the result from your database table without making any modification. How do you do that?
- a) You cannot do this. Actual update will take place.
 - ☒ b) Give the arithmetic expression to invoke salary increment in the select clause
 - c) Give the arithmetic expression to invoke salary increment in the from clause
 - d) Give the arithmetic expression to invoke salary increment with an update clause

16. You created a table with the following syntax:

```
Create table student  
(Student_id number(4) primary key,  
Student_name varchar2(15),  
Course varchar2(10) not null,  
Age number(2) check (age between 18 and 65));
```

For which column(s) will an index be created automatically?

- a) Student_id
- ☒ b) Student_name
- c) Course
- d) Age

17. Which command or action causes an automatic rollback?

- a) Grant command
- b) Alter command
- ☒ c) System Crash
- d) Commit before a system crash

18. What kind of join condition am I creating between the EMP and DEPT table in the following query?

```
Select a.ename, b.job  
From emp a, dept d;
```

- ☒ a) Equijoin
- b) Outer Join
- ☒ c) Castesian product
- d) Self Join

19. What kind of join condition am I creating in the following query?

```
Select a.ename "Employee", a.job, b.ename, b.job  
From emp a, emp b  
where a.empno = b.empno;
```

- a) Equijoin
- b) Outer Join
- c) Castesian product
- ☒ d) Self Join

20. You write a SELECT statement with two join conditions. What is the maximum number of tables you have joined together without generating a Cartesian product?

- a) 0
- b) 4
- c) 2
- ☒ d) 3

M/C ANSWERS

1	a	b	c	d
2	a	b	c	d
3	a	b	c	d
4	a	b	c	d
5	a	b	c	d
6	a	b	c	d
7	a	b	c	d
8	a	b	c	d
9	a	b	c	d
10	a	b	c	d
11	a	b	c	d
12	a	b	c	d
13	a	b	c	d
14	a	b	c	d
15	a	b	c	d
16	a	b	c	d
17	a	b	c	d
18	a	b	c	d
19	a	b	c	d
20	a	b	c	d

X

X

Question 2:

(10 marks)

Consider the following relational schema for database with information about ABC Company.

EMPLOYEES table:

EMPNO	ENAME	JOB	MGR	HIREDATE	SALARY	BONUS	EMAIL	DEPTNO
7329	SMITH	CEO		17-DEC-85	9,000.00		smith@abc.co.uk	20
7499	ALLEN	VP-SALES	7329	20-FEB-90	7,500.00	100.00	allen@abc.co.uk	30
7521	WARD	MANAGER	7433	22-FEB-90	5,000.00	200.00	ward@abc.co.uk	30
7566	JONES	SALESMAN	7521	02-APR-90	2,975.00	400.00	jones@abc.co.uk	30
...
...

DEPARTMENTS table

DEPTNO	DNAME	LOC
20	RESEARCH	DALLAS
30	SALES	NEW
40	MARKETING	BOSTON
...
...

Give SQL statements to create the tables for the above company. Specify also the PRIMARY and FOREIGN KEY constraints in the SQL statements. Choose appropriate data types for each column.

- Write SQL statement to create the table **EMPLOYEES** table taking into consideration the following:
 - the salary is a positive number ranging from 0-10000. Each employee record must have a value for salary.
 - the employee email is unique
 - hiredate is not null and it defaults to the system date at time of record insertion

CREATE TABLE employees (

empno

number(4) constraint employees_empno_pk primary key,

ename

varchar(20),

job

varchar(20),

mgr

number(4),

hiredate

date default sysdate,

salary

number(7,2),

bonus

number(7,2),

email

varchar(50) constraint employees_email_uk unique,

deptno

number(2),

constraint employees_salary_cc check((salary >= 0) And (salary <= 10000)),

constraint employees_salary_nn not null (salary),

constraint employees_hiredate_nn not null (hiredate),

constraint employees_deptno_fk Foreign key (deptno) References departments (deptno);

2.5

2. Creation of table **DEPARTMENTS**: (Add the constraint that department name is unique and that location cannot be null)

```
CREATE TABLE department(
  depto number(2) constraint department-depto-pk primary key,
  dname varchar2(20),
  loc varchar2(20) constraint department-loc-n not null,
  constraint department-dname-uk unique(dname));
```

3. Add a new column Gender to **Employees** table. The possible values for this field is ('M' or 'F').

```
alter table employees
add (Gender char(1) constraint employees-gender-cc
check ((gender = 'M') OR (gender = 'F')));
```

4. Disable the constraint that deptno in **Employees** table acts as a foreign key to the **Department** table.

```
Alter table employees
disable constraint employees-deptno-fk;
```


Question 3:

Write the SQL statements that you would have used to do the following

(10 marks)

1. Insert the first row in the Employees table.

✓ insert into employees values (7329, 'Smith', 'CEO', null,
to_date('17 12 85', 'DD MM YY'), 9000,
null, 'smith@abc.co.uk', 20);

2. Increase the salary of all male salesmen by \$ 100.

update employees

set salary = salary + 100

✓ where gender = 'M' AND Job = 'Salesman';

3. Create a view table named **femaleStaff** that displays (Ename, job, hiredate, department name and the city of the department location) for all female employees ordered by their hireDate.

Create view femalestaff As

select ename, job, hiredate, ~~department~~ loc
from employees e, departments d

where e.deptno = d.deptno And gender = 'F'

order by hiredate asc;

4. For each Department, find the minimum and maximum salary of employees in that department.

select ~~ename~~ max(salary), min(salary), deptno

from employees

Group by deptno;

OK

5. For each employee display the name of the employee and the name of his/her manager.

select emp.ename, man.ename

from employees emp, employees man

where emp.MGR = man.empno;

Question 4:

Employee

SSN	ENAME	AGE	SALARY
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Consider the above table **Employee** and the following PL/SQL code:

```

DECLARE
    v_ename      employee.ename%TYPE;
    v_age        employee.age%TYPE;
    v_salary     employee.salary%TYPE;

BEGIN
    SELECT ename, age, salary
    INTO v_ename, v_age, v_salary
    FROM employee
    WHERE salary >= 100000;

    DBMS_OUTPUT.PUT_LINE('the employee with a high salary is: ' || v_ename || ' ' ||
        v_age || ' and a salary of: ' || v_salary);

END;
```

1. What could go wrong with the following PL/SQL code which tries to get hold of the employee with a salary ≥ 100000 . It prints on the screen the Name and age of that employee. (2 marks)

If there is no employee with salary ≥ 100000
 OR ~~if~~ if there are ~~more than one~~ more than one employees.

2. Re-write the code so that you avoid the problems that might arise from running the code given below. (3 marks)

Declare

emp_c cursor is
 select ename, age, salary
 from employees
 where salary ≥ 100000 ;

emp_r emp_c%rowtype;

Begin

for emp_r in emp_c loop

DBMS_OUTPUT.put_line('the employee with a high salary
 is: ' || emp_r.ename || ' ' || emp_r.age || ' and
 a salary of: ' || emp_r.salary);

end loop

END;

Question 5:

Assume you have two tables: the **product** table and **order_items** table. Note that *product_id* is a primary key in **product** table and a foreign key in **order_items** table.

If we try to delete a *product_id* from the **product** table when it has child records in **order_items** table an exception will be thrown with oracle code number -2292.

Write a PL/SQL block of code that provides a name to this exception and handles it in the exception section with a proper action (e.g. prints a message saying that "Child records are present for this *product_id*"). (5 Marks)

Declare

e-child-record-deletion ~~exception~~;

~~pragma~~ (*e-child-record-deletion*, -2292);

Begin

delete from ~~product~~ product
where *product_id* = 5;

~~dbms-output~~.put_line('deletion done');

Exceptions

~~when~~ ^{if} *e-child-record-deletion* then

~~dbms-output~~.put_line('child records are present
for this *product_id*');

End;

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